



**Federal Aviation
Administration**

Alaska Industry Council

February 2010



AGENDA

- Opening Remarks – **Jere Hayslett**
- Operational Update – **Lari Belisle**
- Alaska Automated Weather – **Doc Richardson**
- GNSS Update – **JoAnn Ford**
- Industry Council Name Change Discussion – **Tom George**
- Round Table - **All**



Flying to Cantwell.

Surveillance and Broadcast Services

Alaska Industry Council

By: Jere Hayslett

February 10, 2010



•Federal Aviation
•Administration



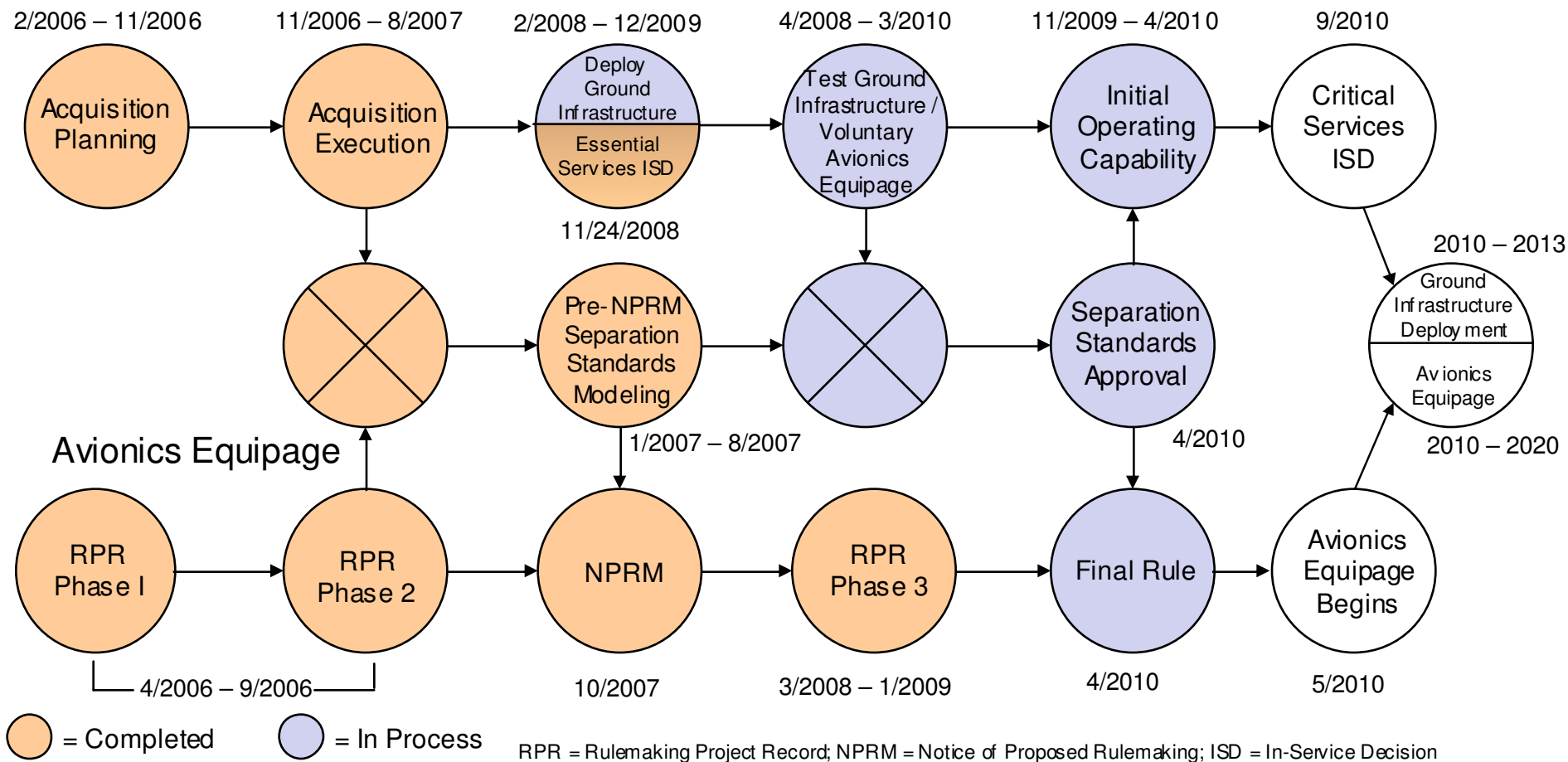
Key Site Status

- **Essential Services**
 - Miami Area In Service Decision – November 2008 ✓
- **Critical Services**
 - Louisville Initial Operating Capability (IOC) – November 2009 ✓
 - Gulf of Mexico IOC –December 2009 ✓
 - Philadelphia IOC – Planned February 2010
 - Juneau IOC Planned – April 2010
 - In Service Decision – Planned September 2010



Strategy

Ground Infrastructure



Rulemaking Next Steps: Schedule to Final Rule

Milestone	Planned Date of Completion	Status / Comments
FAA Rulemaking Team finalizes RPR Phase 3	January 14, 2009	Complete
RPR Phase 3 Submitted to ARM	January 21, 2009	Complete
Rulemaking Council Approval of RPR	January 27, 2009	Complete
Rulemaking Team Drafts Final Rule	May 2009	Complete
Final Rule Economic Assessment	August 2009	Complete
Final Rule Concurrence through Directors	October 2009	Complete
Final Rule Concurrence through Associates	November 2009	Complete
Final Rule Concurrence through Administrator	December 2009	Complete
Final Rule Approved through OST	February 2010	Ongoing
Final Rule Approved through OMB	April 2010	
Final Rule Published in Federal Register	April 2010	

RPR = Rulemaking Project Record



Juneau WAM

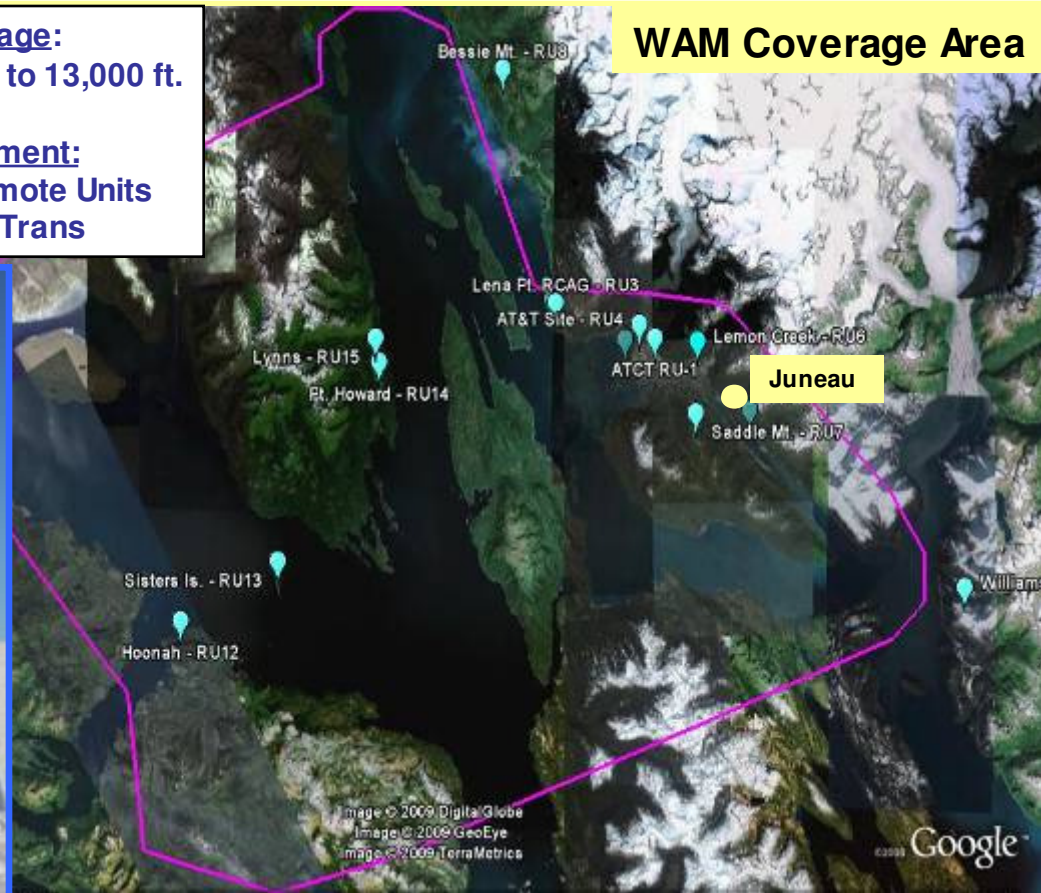
- Able to use for air traffic control / separation services purposes
- Lower altitude surveillance for transponder equipped aircraft

**Achieved Initial Operating Capability –
January 25, 2010**

Coverage:
500 ft. to 13,000 ft.
MSL
Equipment:
14 Remote Units
4 Ref. Trans

WAM Coverage Area

Williams Mtn.
(As of Dec 7, 2009)



Summary / Next Steps

- **Avionics Defined**
 - Final Rule
- **Ground Infrastructure Deployment**
 - Alaska
 - 2010-Upgrade all 28 existing GBTs to the end-state ITT system
 - Complete SV 11(334) and SV13(336) with new ITT systems
 - Complete new business case for Alaska expansion
 - Integrate DoD radar for TIS-B
- **Procedure Development**
 - Separation
 - Certification
- **Airspace / Routes**
 - Best Equipped, Best Served Policy
 - Gap Filling
 - 5nm Separation Standard in Non-Radar Airspace
 - Improved Route Availability



Automated Weather Remote Alaska IFR Locations

Business Case Prepared
for: Alaska Regional
Administrator

Presented to: Alaska Aviation Industry Council

By: Doc Richardson

Date: February 2010



Federal Aviation
Administration



Previously

- **Collaborative decision making paradigm**
- **Business model from SBS**
- **Currently no FAA program to procure additional automated weather data outside established SBS**
- **Costly systems presently**



AWSS with a weather camera



February 2010

Automated Weather at Remote IFR Locations



Federal Aviation
Administration

Need described in DOT Goals

- ***Safety:*** enhance the public health and safety by working toward the elimination of transportation-related deaths and injuries
- ***Growth:*** facilitate a global transportation system that promotes growth and economic development



Translated into FAA Goals

- ***Safety:*** to achieve the lowest possible accident rate and constantly improve safety
- ***Capacity:*** work with local governments and airspace users to provide capacity in the U.S. airspace system that reduces congestion and meets projected demand in an environmentally sound manner
- ***Organization Excellence:*** ensure the success of FAA's mission...enhanced cost measures and improved decision-making based on reliable data



FAA Flight Plan Strategy

- **Goal: Increased Safety**
 - Objective: Reduce Commercial Air Carrier Fatalities
 - Objective: Reduce General Aviation Fatalities
 - Initiative: Continue to optimize weather camera benefits and explore alternative technologies
 - Support the Alaska Flight Service Safety program



Flight Plan Strategy Continued

- **Goal: Greater Capacity**

- Objective: Increase capacity to meet projected demand
 - Strategy: Meet the new and growing demand for air traffic services through 2025
 - Initiative: Work with interagency groups to achieve an agreed-upon plan for weather-related activities



FAA Flight Plan 4th Quarter Performance Report — September 2009

- **“However, we can’t ignore the fact that we did not meet three crucial targets under the Safety Goal -- ...Alaska Accidents...”**
 - **J. Randolph Babbitt**
Administrator



Planned: Current IFR Locations

- Alakiak
- Allakakeet
- Beaver
- Coldfoot
- Eek
- Kobuk
- Kokhanok
- Kotlik
- Kwethluk
- Legend: Blue, Wx
cams, Light blue
planned locations
- Kwingillingok
- Napakiak
- Napaskiak
- Nikolai
- Nondalton
- Nulato
- Perryville
- Shageluk
- Tok Junction
- Venetie
- Willow



Planned: Future IFR Locations

- Alakanuk
- Chuathbaluk
- Clarks Point
- Eagle
- Elim
- Healy River
- Hughes
- Kasigluk
- Koyokuk
- Larsen Bay
- Quinhagak
- South Naknek 2
- Stony River
- Tatitlek



Percentage of potential IFR users in Alaska compared to allowable flight rules

Part 91 Private	1%
Part 135 On Demand/ Air Taxi	8%
Part 135 Air Carrier/ Scheduled	90%
Part 121 Air Carrier	1%

VFR or IFR without reported weather data at the destination
VFR or IFR reported weather data at the destination or alternate
VFR or IFR with reported weather data at the destination
IFR with reported weather data at destination



Requirement

- **Part 121/135 scheduled air carrier weather minimum required data**
- **FAA Order 8900.1**
 - Time of observation
 - Ceiling
 - Visibility
 - Temperature
 - Dew point
 - Altimeter (pressure)
 - Wind direction
 - Wind speed



Flight under VFR

- **Higher risk**
- **Weather determined by the pilot**
- **Flight managed 3 statute miles at a time**
- **Does not always take into account dynamic weather conditions**
- **Frequently assumes the ability to turn back if flight forward cannot be continued**
- **Higher accident rate**



Flight Under IFR

- **Flight is managed holistically**
- **Safer**
- **Scheduled air carrier cannot take off unless depart and arrival weather is above minimums**
- **Minimum IFR altitudes and TERPS criteria keep aircraft at safe altitudes from obstacles and terrain**
- **IFR structure has more rigor**



Original Approach

- **Surveillance Broadcast Services benefits basis of estimates**
- **Relies on higher passenger throughput or traffic count to drive an economic benefit to offset a conventional automated weather system- in AK \$850K to \$1m+**
- **Cannot get there without aircraft equipage, which is lagging anticipated rate significantly**



Current Approach

- **Benefits basis of estimate**
- **Technical approach**
- **NextGen tie in**
 - NNEW
 - Virtual ATCT
 - 4D Weather Cube
- **Leveraging current systems**
 - Vaisala
 - Coastal Environmental Systems
 - All Weather, Inc.
- **Optical data for virtual system**



Current Average Costs for Wx Systems

- **Telecommunications** **\$60K**
- **Site Preparation** **\$250-300K**
- **Shipping** **\$75K**
- **Power** **\$15-25K**
- **Shelter** **\$50K**
- **Equipment** **\$50-90K**
- **Total, upwards of \$600K**



Benefits Basis of Estimate

Innovative approach to gather approved data that is equal of less than the benefit basis of estimate to give benefit cost ratio of 1.0 or higher

- **Standard paradigm in DC for defending a technical approach**



So how do we get there?

- **Combination of low-cost sensors that will give the data required**
- **Functional groupings**
 - Ceiling
 - Visibility
 - Pressure, altimeter, winds, dew point and time



Ceiling Possibilities

- **Ceilometer**
 - Classic approach to ceiling data
 - Only sees directly above the instrument
- **Optical Data**
 - Can take in prevailing conditions
 - HITL if the airport environment can be viewed
 - The longest stretch for Government to make?



Visibility Possibilities

- **Transmissometer**
 - RVR would be given along the approach path
 - Classic approach to visibility data
 - Cannot take in prevailing conditions for circling
- **Optical Data**
 - Could give RVV, runway visibility for straight in approaches
 - Could give PV, prevailing visibility
 - HITL could also report additional environmental phenomena occurring at the airport

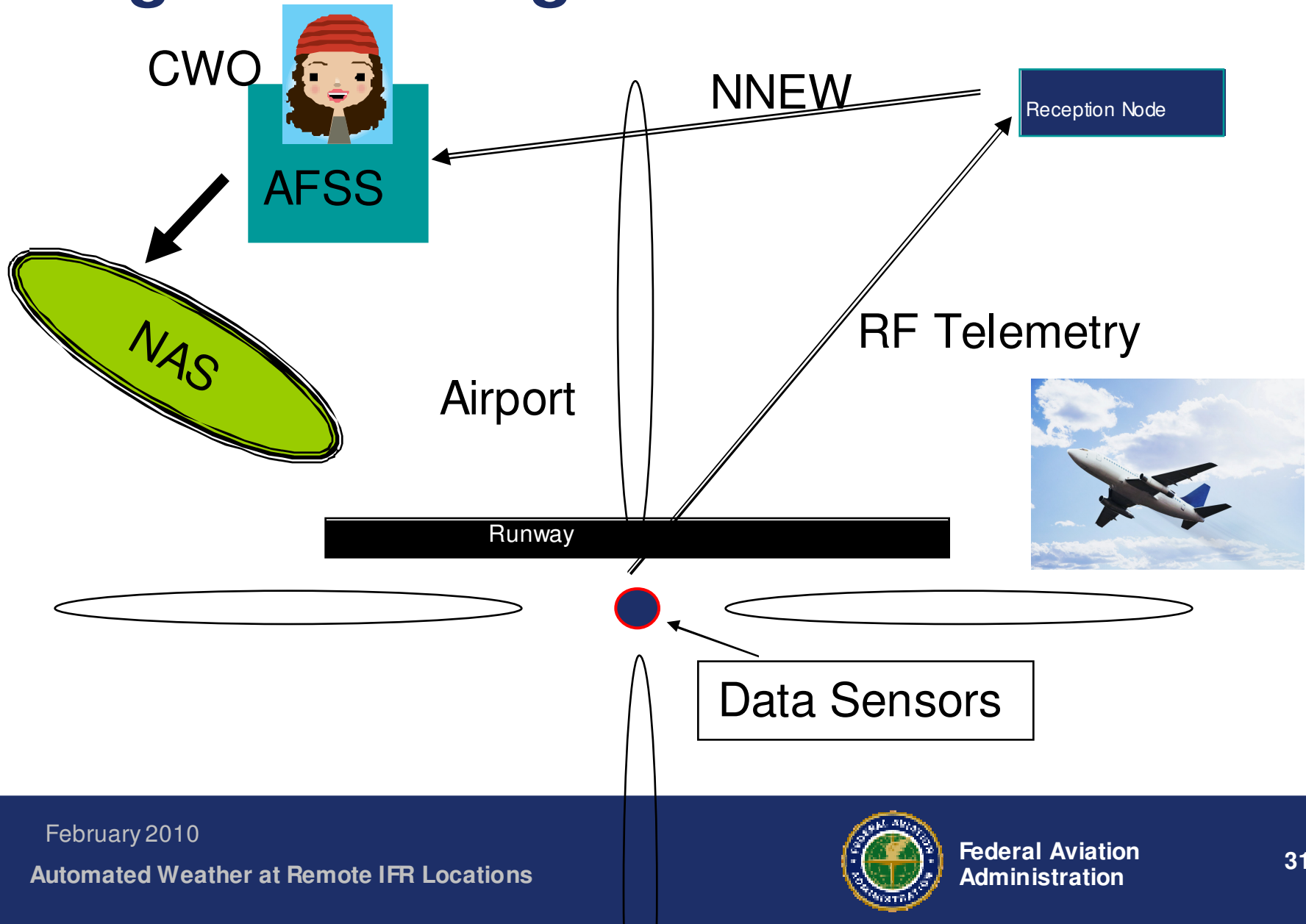


Additional Information

- **Winds, temp, dew point, altimeter, time of the observation**
- **SAWS**
- **AWOS-1**
- **Classical systems, already FAA approved, low cost**



Engineered Together



Roadmap Ahead

- **Reduce the cost for site prep and infrastructure**
- **Benefits basis of estimate calculated**
- **Funding source needs to be located**
- **Validation of concept**



Discussion





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AIR TRAFFIC ORGANIZATION

Alaska Industry Council Meeting - GNSS Update

JoAnn Y. Ford

Navigation Services Systems Engineering

February 10, 2010

Navigation Services Update Profile

- Service Volume
 - All coverage charts in this presentation can be found at:
<http://www.nstb.tc.faa.gov>
- NAS and Alaska Published LPVs
- Status of:
 - WAAS Equipage
 - Cold Bay WAAS Ground Reference Station Relocation
 - LORAN-C Alaska decommissioning
 - Other

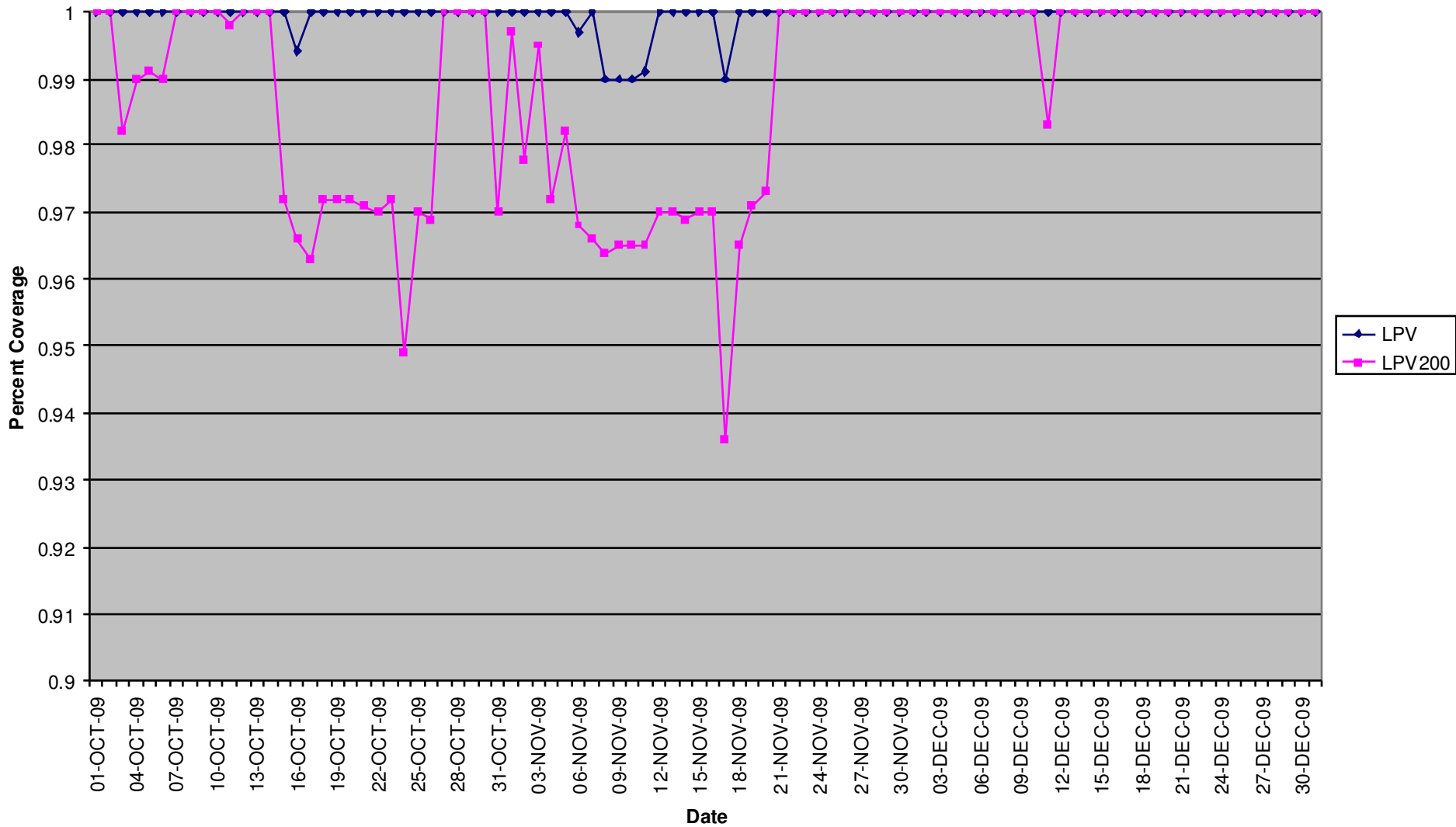
LPV Coverage at Point Thompson, AK during 4th Quarter 2009

The charts are also accessible via the quarterly
WAAS reports available on the internet
(<http://www.nstb.tc.faa.gov/>)

Point Thompson

- This presentation shows the availability of WAAS LPV at Point Thompson, AK
 - A latitude and longitude was provided
- First graph shows the daily availability for LPV and LPV 200
- The second and third graphs show the contour plot for 99% and 99.9% availability
 - Point Thompson is annotated on the map

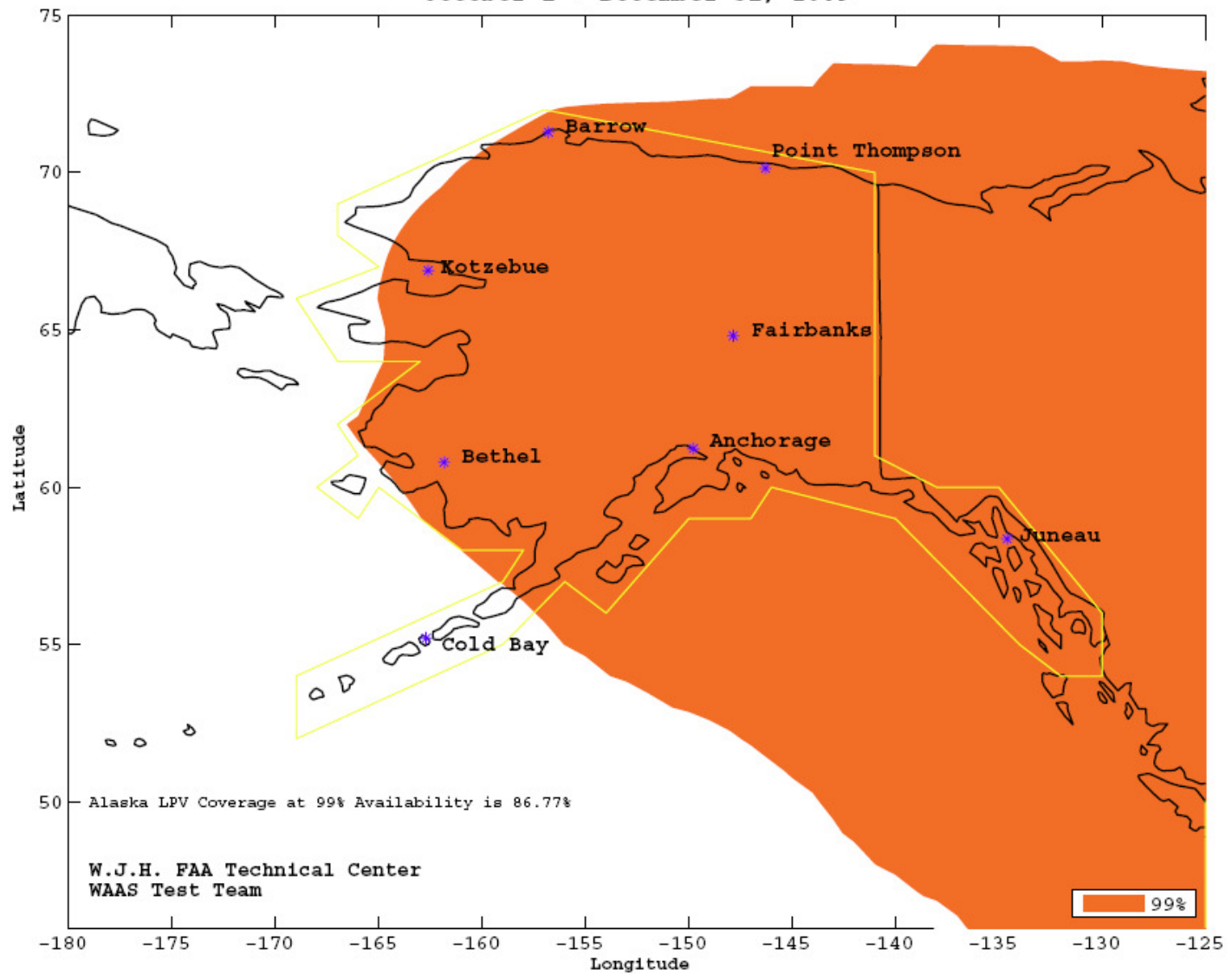
LPV and LPV200 Daily Coverage for Point Thompson, AK



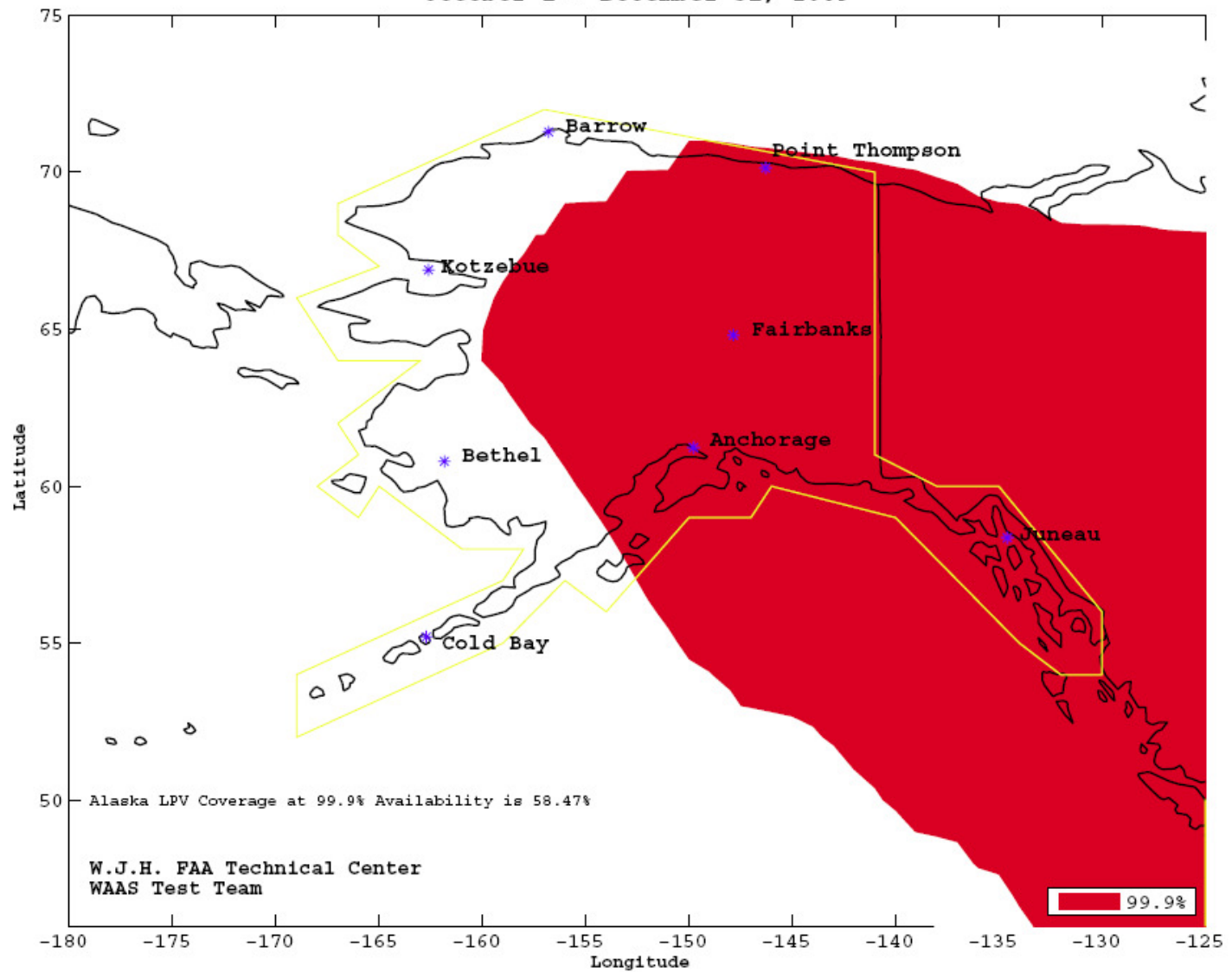
LPV 200 drop on Nov 17

- The LPV200 coverage drop on Nov. 17 was due to several factors:
 - 1) PRN 8 was unusable - Because PRN 8 is located in a primary slot, its unavailability as a ranging source had a significant detrimental effect on Alaska coverage.
 - 2) Following a CRW GUS switchover, the CRW Geosynchronous satellite was unavailable as a precision approach ranging source from about 1000 to 1638 GMT. The loss of CRW as a PA ranging source contributed to elevated protection levels during that time.
 - 3) PRN 12 was unusable from 1338 to 1913 GMT via nanu 2009118. This caused elevated protection levels during the times of the nanu.
- The combination of these three events caused vertical protection levels to rise above 35 meters over much of Alaska, which led to a significant reduction in LPV200 coverage for the day.

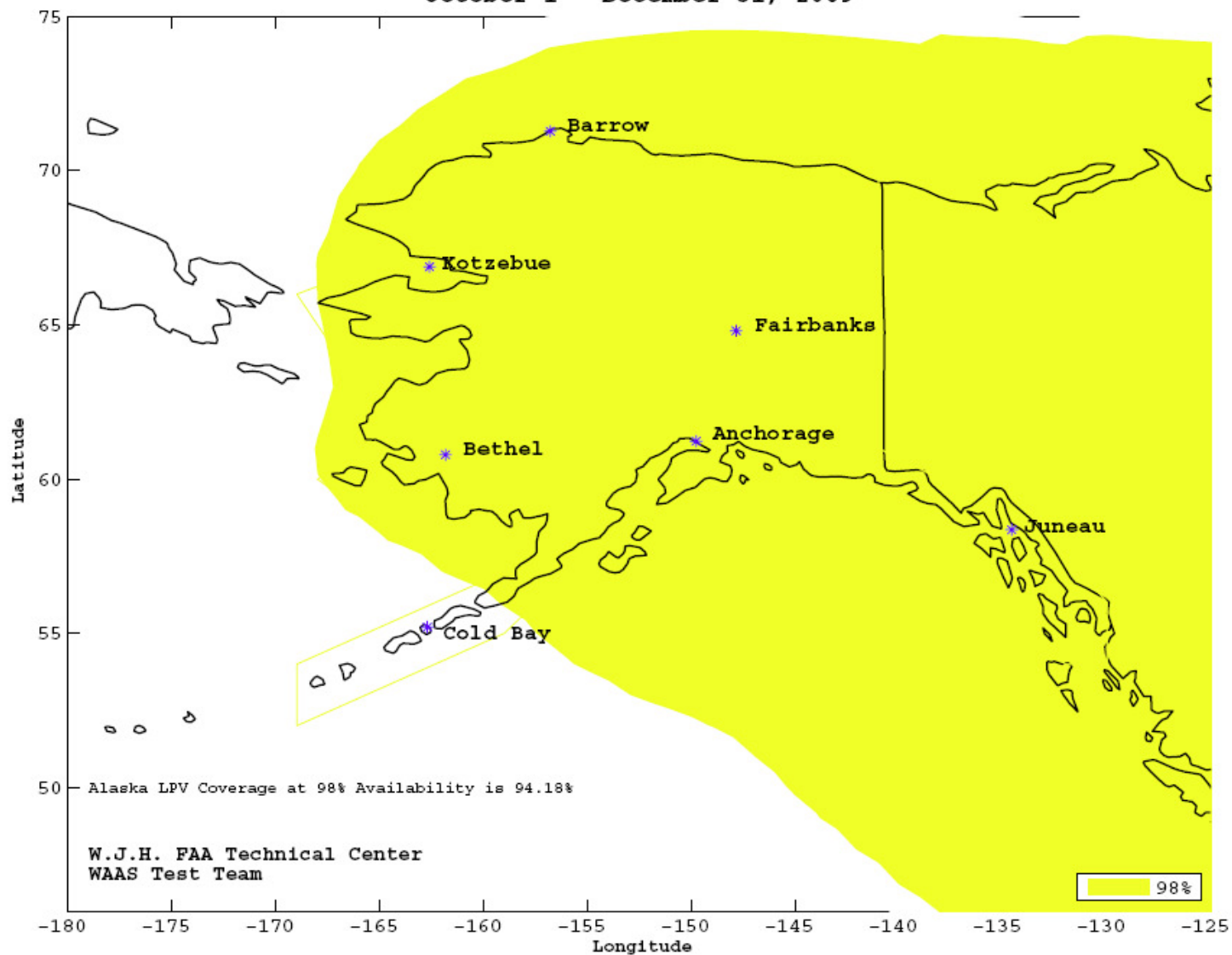
WAAS 99% LPV Coverage Contours
October 1 - December 31, 2009



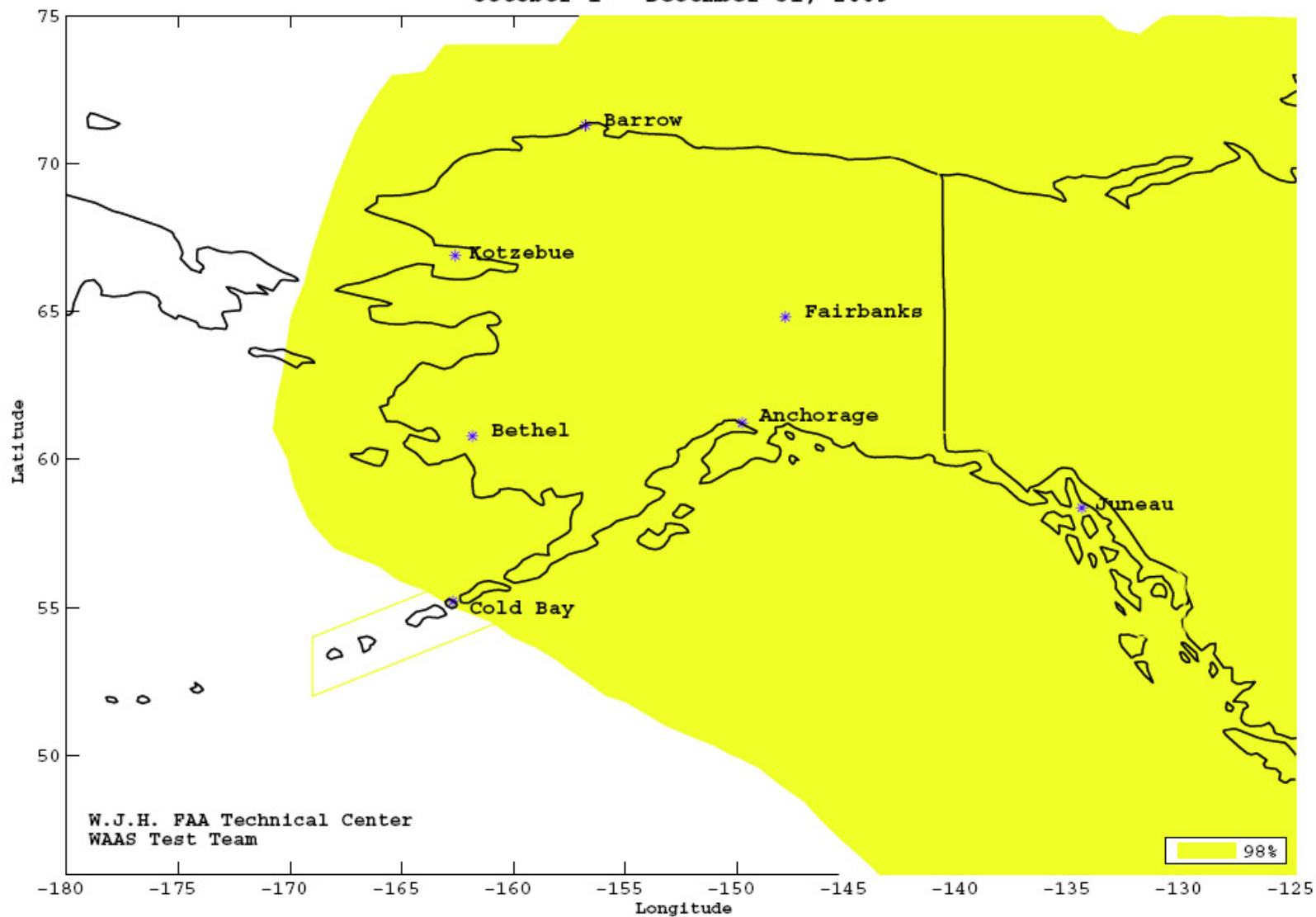
WAAS 99.9% LPV Coverage Contours
October 1 - December 31, 2009



WAAS 98% LPV Coverage Contours
October 1 - December 31, 2009



WAAS 98% LP Coverage Contours
October 1 - December 31, 2009

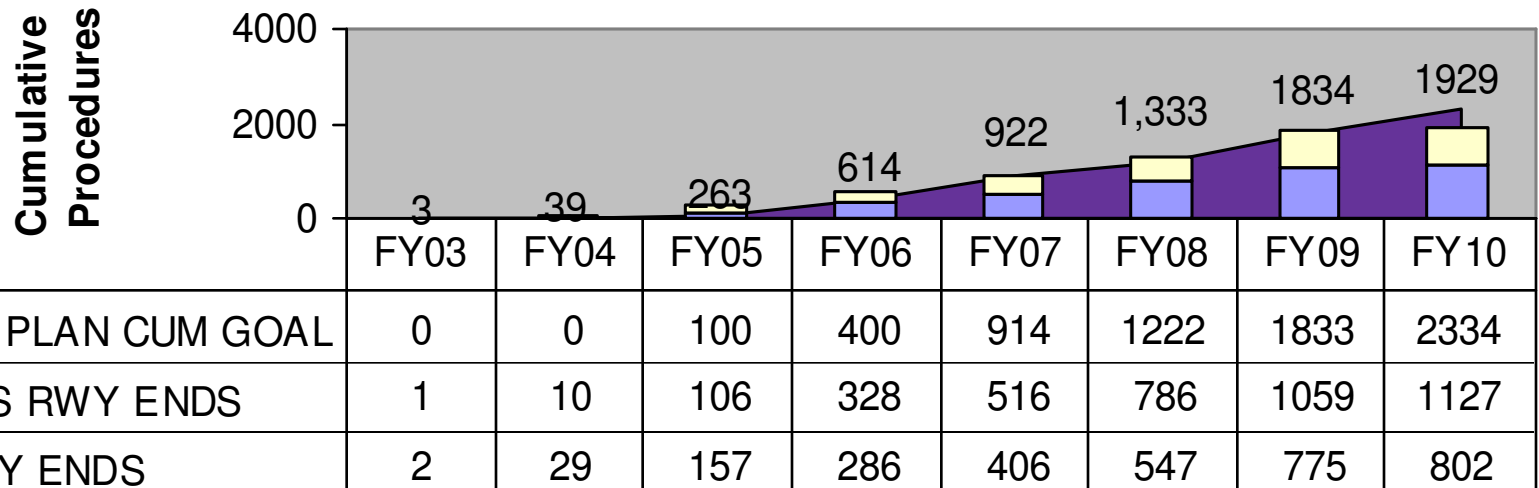


LPV Procedures Published to Date (Current and all prior years)

LPVs Published to non-ILS Runways	1127
LPVs Published to ILS Runways	<u>802</u>
Cumulative LPVs Published to Date	1,929
LPVs Published to <250' Decision Altitude	235

As of 14 Jan 2010

Annual LPV Production Status



Annual Production Totals

	FY03	FY04	FY05	FY06	FY07	FY08	FY09	FY10
Non-ILS Runway Ends	1	9	95	222	188	270	273	74
ILS Runway Ends	2	27	126	129	120	141	227	21
Total LPV per year	3	36	221	351	308	411	501	95

Alaska LPV Approaches

- Total 52 - Current LPV approaches (as of 12/17/09)
- 12/17/09 publications for RWY 18 at Clark's Point and RWY 1 at Elim did not get published; procedures are at NACO/NFDC awaiting Airspace approval
- Current LPV List next Slide

(Ref source: AVN website: includes LPVs from all sources of FAA and AIP funding, private and public approaches)

Alaska LPVs as of 12/17/09 = 52

• Anchorage	3	Shaktoolik	2
• Bethel	2	St Mary's	2
• Chauathbaluk	2	St Michael	1
• Clarks Point	1	Yakutat	3
• Cold Bay	2		
• Deadhorse	2		
• Emmonak	2		
• Fairbanks	4		
• Galena	2		
• Gulkana	2		
• Homer	2		
• Huslia	2		
• Imiamna	2		
• Kenai Muni	2		
• Ketchikan	1		
• King Slamon	2		
• Koyukuk	2		
• Kwethluk	2		
• Napakiak	2		
• Quinhagak	2		
• Ruby	1		
• Selawig	1		
• Shageluk	1		

Alaska Projected LPVs

- 2-11-10 PFNO Noorvik/Robert/Bob/Curtis
- 4-8-10 PAGA Galena/Edward G. Pitka
- 6-3-10 PAOT Kotzebue/Ralph Wien Memo
- 7/29/10 PABR Barrow/Wiley Post-Will Rogers
- 9/23/10 PAKU Kuparuk/Ugnu-Kuparuk and PAWS
Wasilla

WAAS Equipage (list not all-inclusive)

- GARMIN, Universal, Rockwell-Collins, Esterline CMC
- Approx 50,512 (TSO-145 or TSO-146)

Universal Avionics

Approved Acft LPV STCs

ATR-42/300	
B-727-200	First Air
Bombardier Q300	
Bombardier Q-400	Horizon
CL-600	
Cessna 560XL	
Challenger 600/601	UNS
Citation Bravo Series	
Citation V 560 Series	
Citation CE-650	
Citation Encore	
Citation Fleet	Transport Canada
Dash 8	Mid-Canada CTR
Falcon10	

Falcon 20D	
Falcon 20	
Falcon 50	
Falcon 2000	
Gulfstream II	
Lear 35 (C-21)	USAF
Lear 31A	
Lear 35	
Lear 35A	
Lear 45	
Lear 60	
MD-87	
Sabre 65	

Rockwell-Collins

Approved Acft LPV STCs

CRJ-200
Challenger 601-3A
Challenger 604
Challenger CL-604
Citation Jet CJ-1+
Citation Jet CH-2+
Citation Jet CJ-3
Citation Encore+
Dassault Falcon 2000
Hawker-800XP
KingAir-300
Lear 60

Honeywell/CMC TSO & STC Status

Approved *Avionics* LPV TSOs:

- Primus Epic FMS

Pending *Avionics* LPV TSOs:

- Primus 2000 (NZ-2000)
- APEX
- EPIC (in other airframes)
- KSN 770 (for GA acft)

Approved *Aircraft* LPV STCs:

- Gulfstream G-450 & -550

Pending LPV STC Approvals:

- Gulfstream G-IV, G-V
- F-900B,-900EXC
- Challenger CL-601
- Hawker 900
- Citation X
- PC-12
- Viking
- Dassault EASy
- Cessna Sovereign

Additional Alaska Updates

- Status of:
 - Cold Bay WAAS Ground Reference Station Relocation
 - Alaska DF Status
 - Funding to WSA
 - LORAN-C Decommissioning in NAS – Alaskan Communication Impact
 - Other